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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,411	10/30/2003	Vladimir Grushin	PE0649USCNT1	2080
23906 7590 06/28/2005			EXAMINER	
E I DU PONT DE NEMOURS AND COMPANY			KIELIN, ERIK J	
LEGAL PATENT RECORDS CENTER			ART UNIT	
BARLEY MILL PLAZA 25/1128			PAPER NUMBER	
4417 LANCASTER PIKE			2813	
WILMINGTON, DE 19805			DATE MAILED: 06/28/2005	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,411	GRUSHIN ET AL.	
	Examiner	Art Unit	
	Erik Kielin	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/30/03 10/12/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 12 October 2004 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because some of the references have not been provided with dates in accordance with 37 CFR 1.98(b)(5). Also the MPEP 609 states,

“Each publication must be identified by publisher, author (if any), title, relevant pages of the publication, and **date** and place of publication. The date of publication supplied must include at least the **month and year** of publication, except that **the year of publication (without the month) will be accepted if the applicant points out in the information disclosure statement that the year of publication is sufficiently earlier than the effective U.S. filing date and any foreign priority date so that the particular month of publication is not in issue.**” (Emphasis added.)

The IDS has been placed in the application file, but only the references initialed by Examiner have been considered. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2813

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/41512 A1 (**Thompson** et al.) in view of the article **Djurovich** et al. "Ir(III) cyclometalated complexes as efficient phosphorescent emitters in polymer blend organic LEDs" Polymer Preprints 41(1), 2000, pp. 770-771.

Thompson discloses the general formulas for electroluminescent metal complexes for use in the light-emitting layer of a light-emitting device, as $LL'L''M$ and L_2MX and L_3M , wherein M may be iridium (Ir) and each L, L', L'' are bidentate ligands of the variety shown in Fig. 39 and called "arylquinolines," and X is a bidentate ligand such as acetylacetonate (acac; Fig. 1) or hexafluoroacetylacetonate (p. 17). (See paragraph bridging pp. 3-4 and pp. 12 and 17). As shown in Fig. 39, each ring of the arylquinoline may be substituted with R, R', and R''.

The light emitting layers emit light in the range of 570 nm to 700 nm (pp. 34 and 35). Moreover, because the compounds disclosed are the same as those claimed, the emission is inherently within the claimed range; otherwise, claim 26 is would not be enabled by Applicant's own admission.

Because the light-emitting layer is the location where electrons and holes charges are transported to recombine with the emission of light. The light-emitting layer is a charge transport layer because the charges must move through the light-emitting layer in order to recombine.

Thompson does not indicate what are the substituents R, R', and R''.

Djurovich discloses electroluminescent Ir metal complexes having ligands also disclosed in **Thompson**. (Note that each of Thompson and Djurovich are common inventor/authors on

each reference.) **Durovich** indicates that substituting the ring of the ligands with fluorine improves the solubility of the complex in the carrier matrix without much change to the emission spectrum (paragraph bridging pp. 770-771).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to have the substituents R, R', and R" be fluorine in the arylquinoline rings of **Thompson**, in order to improve the solubility of the compounds for subsequent manufacture of the light-emitting device, as taught by **Djurovich**.

Further regarding claim 26, **Thompson** gives an exemplary amount of the Ir metal complex of 12% (Thompson, p. 30, for example.) While Thompson does not give amounts greater than 20%, this feature is *prima facie* obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also *In re Boesch*, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and *In re Aller*, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to use greater than 20% of the Ir metal complex in the light-emitting layer of **Thompson** in order to increase the total amount of light which can be emitted from the device.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent Application Publication 2003/0068526 A1 (**Kamatani** et al.) discloses the presently claimed compounds (Abstract; Tables 1-23).

US Patent Application Publication 2003/0072964 (**Kwong** et al.) discloses the presently claimed compounds (Figs. 3 and 4; paragraph [0149]).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 571-272-1693. The examiner can normally be reached from 9:00 - 19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Erik Kielin
Primary Examiner
June 26, 2005